



TAXONOMIC STATUS OF *ATELOPUS PACHYRHYNUS* MIRANDA-RIBEIRO, 1920,  
REDESCRIPTION OF *MELANOPHRYNISCUS TUMIFRONS* (BOULENGER, 1905),  
AND DESCRIPTIONS OF TWO NEW SPECIES OF *MELANOPHRYNISCUS* FROM THE  
STATE OF SANTA CATARINA, BRAZIL (AMPHIBIA, ANURA, BUFONIDAE)<sup>(1)</sup>

(With 19 figures)

ULISSES CARAMASCHI<sup>(2)</sup>  
CARLOS ALBERTO GONÇALVES CRUZ<sup>(2)</sup>

**ABSTRACT:** *Atelopus pachyrhynus* Miranda-Ribeiro, 1920, currently a synonym of *Melanophryniscus tumifrons* (Boulenger, 1905), is revalidated through direct comparison of the types. The lectotype for *Melanophryniscus pachyrhynus* is designated, and the type-locality is restricted to São Lourenço do Sul, State of Rio Grande do Sul, Brazil. *Melanophryniscus tumifrons* is redescribed and its type-locality is discussed and restricted. Two new species belonging to the *M. tumifrons* group are described from the State of Santa Catarina, Brazil: *Melanophryniscus spectabilis* sp.nov. from the Municipality of Nova Teutônia, and *Melanophryniscus simplex* sp.nov. from Boca da Serra, Municipality of São Joaquim.

**Key words:** Anura, Bufonidae, *Atelopus pachyrhynus*, *Melanophryniscus tumifrons*, *Melanophryniscus spectabilis* sp.nov., *Melanophryniscus simplex* sp.nov., Taxonomy.

**RESUMO:** Posição taxonômica de *Atelopus pachyrhynus* Miranda-Ribeiro, 1920, redescrição de *Melanophryniscus tumifrons* (Boulenger, 1905) e descrição de duas espécies novas de *Melanophryniscus* do Estado de Santa Catarina, Brasil (Amphibia, Anura, Bufonidae).

*Atelopus pachyrhynus* Miranda-Ribeiro, 1920, atualmente na sinonímia de *Melanophryniscus tumifrons* (Boulenger, 1905), é revalidada através da comparação direta dos exemplares-tipo envolvidos. O lectótipo para *Melanophryniscus pachyrhynus* é designado e sua localidade-tipo é atualizada e designada para São Lourenço do Sul, Estado do Rio Grande do Sul, Brasil. *Melanophryniscus tumifrons* é redescrita e sua localidade-tipo é discutida e restrita. Duas novas espécies pertencentes ao grupo de *M. tumifrons* são descritas do Estado de Santa Catarina, região sul do Brasil. *Melanophryniscus spectabilis* sp.nov. foi coletada no Município de Nova Teutônia e *Melanophryniscus simplex* sp.nov. em Boca da Serra, Município de São Joaquim.

**Palavras-chave:** Anura, Bufonidae, *Atelopus pachyrhynus*, *Melanophryniscus tumifrons*, *Melanophryniscus spectabilis* sp.nov., *Melanophryniscus simplex* sp.nov., Taxonomia.

## INTRODUCTION

The genus *Melanophryniscus* is a monophyletic taxon according to GRAYBEAL & CANNATELLA (1995) and is currently composed of 13 species distributed among three species groups: the *moreirae* group [*M. moreirae* (Miranda-Ribeiro, 1920) and *M. sanmartini* Klappenbach, 1968], the *stelzneri* group [*M. atroluteus* (Miranda-Ribeiro, 1920), *M. cupreuscapularis* Céspedes & Alvarez, 2000 "1999", *M. klappenbachii* Prigioni & Langone, 2000, *M. montevidensis* (Philippi, 1902), *M. rubriventris* (Vellard, 1947), and *M. stelzneri* (Weyenbergh, 1874)], and the *tumifrons* group [*M. cambaraensis* Braun & Braun, 1979, *M. devicenzii* Klappenbach, 1968, *M. macrogranulosus* Braun, 1973, *M. orejasmirandae* Prigioni & Langone, 1987 "1986",

and *M. tumifrons* (Boulenger, 1905)] (FROST, 2002). However, these groups and species have not been assessed by modern taxonomical analysis, and several modifications are expected.

In this paper we study species belonging to the *M. tumifrons* group, which are readily distinguished from species of the other groups in having a conspicuous, rounded protuberance on the snout, extending to between the eyes (protuberance absent in species of the *moreirae* and *stelzneri* groups). *Atelopus pachyrhynus* Miranda-Ribeiro, 1920, currently a synonym of *Melanophryniscus tumifrons* (Boulenger, 1905), is revalidated. The lectotype for *Melanophryniscus pachyrhynus* is designated, and its type-locality is discussed. *Melanophryniscus tumifrons* is

<sup>1</sup> Received on March 22, 2002. Accepted on August 7, 2002.

<sup>2</sup> Museu Nacional/UFRI, Departamento de Vertebrados. Quinta da Boa Vista, São Cristóvão, 20940-040, Rio de Janeiro, RJ, Brasil.  
Fellow of Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

redescribed and its type-locality is discussed and restricted. Two new species referred to the *M. tumifrons* group are described.

#### MATERIAL AND METHODS

Specimens examined are deposited in BMNH (British Museum, Natural History, London, England), MNRJ (Museu Nacional, Rio de Janeiro, RJ, Brazil), AL-MN (Adolpho Lutz Collection, at the MNRJ), and MZUSP (Museu de Zoologia, Universidade de São Paulo, SP, Brazil).

Measurements (in mm) are: SVL (snout-vent length); HL (head length); HW (head width); IND (internarial distance); END (eye to nostril distance); ED (eye diameter); UEW (upper eyelid width); IOD (interorbital distance); THL (thigh length); TL (tibia length); FL (foot length). Measurements were taken with dial calipers under Zeiss SV-4 stereomicroscope.

#### RESULTS

*Melanophryniscus pachyrhynus*  
(Miranda-Ribeiro, 1920), revalidated, new comb.  
(Figs.1-4)

*Atelopus pachyrhynus* MIRANDA-RIBEIRO, 1920, 1926; MÜLLER, 1934; PRIGIONI & LANGONE, 1986.

Lectotype – BRAZIL, RIO GRANDE DO SUL, São Lourenço do Sul (31°22'S, 51°59'W), MZUSP 756, adult ♂ (Fig.1), C.Euler col., 1905 (By present designation).

Paralectotype – BRAZIL, RIO GRANDE DO SUL, MZUSP 752, adult ♀, H. von Ihering col., 1890.

Diagnosis – A medium sized species of the *M. tumifrons* group, diagnosed by the following combination of characters: (1) SVL 28.8mm in male, 33.4mm in female; (2) head broader than long, with a pronounced, rounded protuberance above snout, extending between the eyes to near the middle of the length of the upper eyelid; (3) skin on dorsal and lateral surfaces of body largely covered by spinulose warts; (4) foot with a prominent glandular tumefaction on metatarsus of toes IV and V; (5) ground color of dorsum and flanks uniform brown; (6) chin, chest, belly, and ventral surfaces of arms and legs brown with mottled cream; (7) dorsal surfaces of legs brown.

Description of lectotype – General aspect robust,



Fig.1- *Melanophryniscus pachyrhynus* (Miranda-Ribeiro, 1920), lectotype ♂ (MZUSP 756), dorsal and ventral views.

bufonoid. Head broader than long; head width nearly one third of SVL; head lacking cranial crests; snout short, projecting slightly beyond anterior margin of mouth, rounded in dorsal view and vertical in lateral view (Figs.2-3); a prominent, rounded protuberance on dorsal aspect of snout, extending between the eyes to a point near the mid length of upper eyelid; in lateral view, snout protuberance is raised above the level of upper eyelid; an inconspicuous longitudinal sulcus bisects the snout protuberance; canthus rostralis rounded due to snout protuberance; loreal region slightly concave, vertical; nostrils very small, at tip of snout, directed anteriorly; IND nearly equals UEW and approximately half of IOD; IOD nearly twice UEW; ED larger than IND, END, and UEW, and about 75% IOD; tympanum concealed; vocal slits present; tongue rounded, much longer than wide, with posterior margin free; choanae small, rounded, largely separated.

Arms slender, lacking ulnar folds; axillary membrane absent. Hands currently damaged, with fingers short; length of fingers from shortest to largest,  $II < I < IV < III$ ; tips of fingers narrow, rounded, not differentiated as discs; fingers fimbriated; webbing absent between fingers I and II, vestigial between the others (based on the paralectotype). Outer palmar tubercle large, rounded; inner palmar tubercle small, subelliptical, approximately 33% the size of outer tubercle; subarticular tubercles

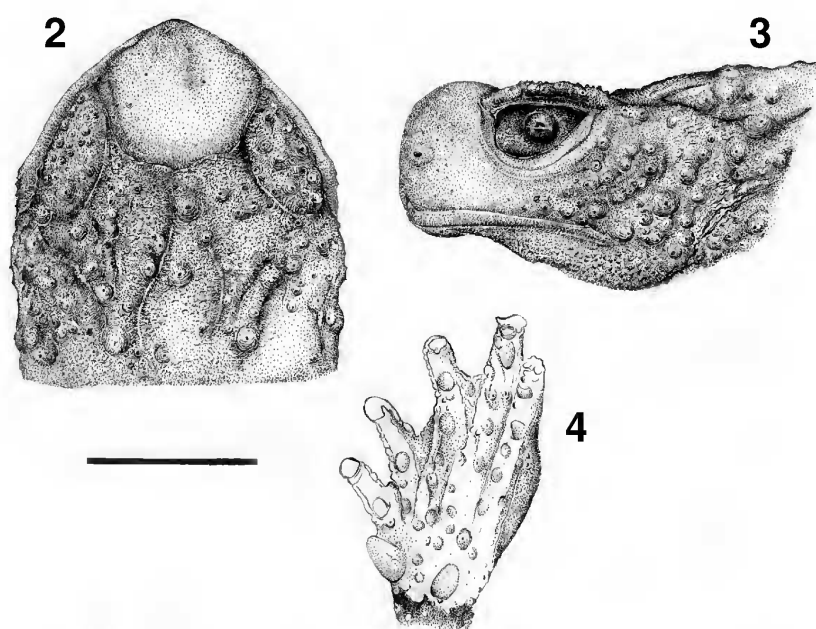
developed, subconical; supernumerary tubercles present. Legs short, robust, lacking tarsal folds; TL greater than THL; sum of the TL and THL is 66% of SVL. Foot (Fig.4) with toes short, currently damaged; a prominent glandular tumefaction on metatarsus of toes IV and V. Length of toes from shortest to longest,  $I < II < V < III < IV$ ; tips of toes narrow, rounded, not differentiated as discs; toes fimbriated, approximately half webbed; border of web indented. Inner metatarsal tubercle large, ovoid, prominent, with inner border free; outer metatarsal tubercle small, subconical, approximately 50% the size of inner metatarsal tubercle; subarticular tubercles well developed, subconical; supernumerary tubercles present.

Skin on dorsal and lateral surfaces largely covered by spinulose warts, snout protuberance smooth; ventral skin spinulose. Cloacal opening directed posteriorly at mid-level of thighs.

In preservative (70% ethanol), ground color of dorsum and flanks uniform brown; chin, chest, belly, and ventral surfaces of arms and legs brown with mottled cream; ventral surfaces of thighs cream.

Measurements of lectotype – SVL 28.8; HL 9.1; HW 9.4; IND 2.0; END 2.3; ED 2.8; UEW 2.0; IOD 3.7; THL 9.1; TL 10.0.

Measurements of paralectotype – SVL 33.4; HL 9.1; HW 9.9; IND 2.2; END 2.6; ED 2.8; UEW 2.1; IOD 3.9; THL 10.7; TL 12.5; FL 20.0.



*Melanophryniscus pachyrhynus* (Miranda-Ribeiro, 1920), lectotype ♂ (MZUSP 756): fig.2- dorsal view of head; fig.3- lateral view of head; fig.4- foot (toes IV and V broken). Scale bar: 5mm.



Variation – There is little variation between the types, except in size. The paralectotype is faded.

Remarks – *Atelopus pachyrhynus* was described by MIRANDA-RIBEIRO (1920) and synonymized with *Dendrophryniscus tumifrons* (Boulenger) (currently *Melanophryniscus tumifrons*; GALLARDO, 1961a, b) by MÜLLER (1934). This proposition was accepted by subsequent authors (BOKERMANN, 1966; FROST, 2002; GORHAM, 1974), although PRIGIONI & LANGONE (1986) suggested that they may be two distinct species. However, PRIGIONI & LANGONE (1986) did not revalidate *Atelopus pachyrhynus* due to uncertainties regarding the proper type-locality of *Melanophryniscus tumifrons* (see below) and the absence of fresh specimens of *A. pachyrhynus*.

Direct comparison between the holotype of *Atelopus tumifrons* (BMNH 1902.12.8.5) and the syntypes of *Atelopus pachyrhynus* (MZUSP 752, MZUSP 756) indicated that they are distinct species. Accordingly, we revalidated *Atelopus pachyrhynus* Miranda-Ribeiro, 1920, with the consequent new combination *Melanophryniscus pachyrhynus* (Miranda-Ribeiro, 1920).

The description of *Melanophryniscus pachyrhynus* was based on two syntypes obtained in Rio Grande do Sul (MZUSP 752) and in “São Lourenço, S. Paulo” (MZUSP 756), according to the original description. BOKERMANN (1966) reported that the attribution of São Lourenço as a locality in the State of São Paulo was certainly in error, because the specimen was collected by Euler, who made extensive collections in São Lourenço, in the State of Rio Grande do Sul; currently this city is named São Lourenço do Sul. Here we designate the specimen MZUSP 756 as the lectotype for *Atelopus pachyrhynus* Miranda-Ribeiro, 1920. This specimen was selected as lectotype because it was illustrated in the original description, is currently better preserved than the paralectotype, and the collection locality is better defined. Accordingly, here we restrict the type-locality of *Atelopus pachyrhynus* Miranda-Ribeiro, 1920 to São Lourenço do Sul (31°22'S, 51°59'W), State of Rio Grande do Sul, Brazil.

*Melanophryniscus tumifrons* (Boulenger, 1905)  
(Figs.5-9)

*Atelopus tumifrons* BOULENGER, 1905.

*Dendrophryniscus tumifrons* - MÜLLER, 1934.

*Melanophryniscus tumifrons* - GALLARDO, 1961a, b; BOKERMANN, 1966; GORHAM, 1974; FROST, 1985, 2002.

Holotype – BMNH 1947.2.1461 (BM 1902.12.8.5, according to FROST, 1985, 2002), adult ♀ (Fig.5), “from Pernambuco, presented by Dr. F. Werner”, according to the original description (BOULENGER, 1905).

Diagnosis – A medium sized species of the *M. tumifrons* group, diagnosed by the following combination of characters: (1) SVL 23.0-25.3mm in males, 29.9mm in female; (2) head slightly broader than long, with a prominent, rounded protuberance above snout, extending between the eyes to near mid length of upper eyelid; (3) skin on dorsal and lateral surfaces of body largely covered by spinulose warts; (4) foot without tumefaction on metatarsus; (5) ground color of dorsum and flanks blackish brown; (6) ventral surfaces of hands, feet, and arms whitish cream; (7) three spots on chin and throat (mental and subarticular), and a large whitish cream blotch covering the lower belly and the lower side of the thighs; (8) dorsal surfaces of legs dark brown.

Description of holotype – General aspect robust, bufonoid. Head slightly broader than long; head width nearly one third of SVL; head lacking cranial crests; snout short, slightly projecting beyond anterior margin of mouth, rounded in dorsal view and vertical in lateral view (Figs.6-7); a prominent, rounded protuberance above snout, extending between eyes to a point near the mid length of upper eyelid; in lateral view, snout protuberance raised above the level of upper eyelid; an inconspicuous longitudinal sulcus bisects the snout protuberance; canthus rostralis rounded due to snout protuberance; loreal region slightly concave, vertical; nostrils very small, situated at tip of snout, directed anteriorly; IND slightly less than UEW and approximately half IOD; UEW approximately 60% of IOD; ED greater than IND, END, and UEW, and about 75% of IOD; tympanum concealed; tongue rounded, much longer than wide, with posterior margin free; choanae small, rounded, largely separated.

Arms slender, lacking ulnar folds; axillary membrane absent. Hand (Fig.8) with fingers moderately long; length of fingers from shortest to largest, I<II<IV<III; tips of fingers narrow, rounded, not differentiated as discs; fingers fimbriated; webbing absent between fingers I and II, vestigial membranes present between other digits. Outer palmar tubercle large, rounded; inner palmar tubercle small, subelliptical, approximately 33% size of outer tubercle; subarticular tubercles well developed, subconical; supernumerary tubercles

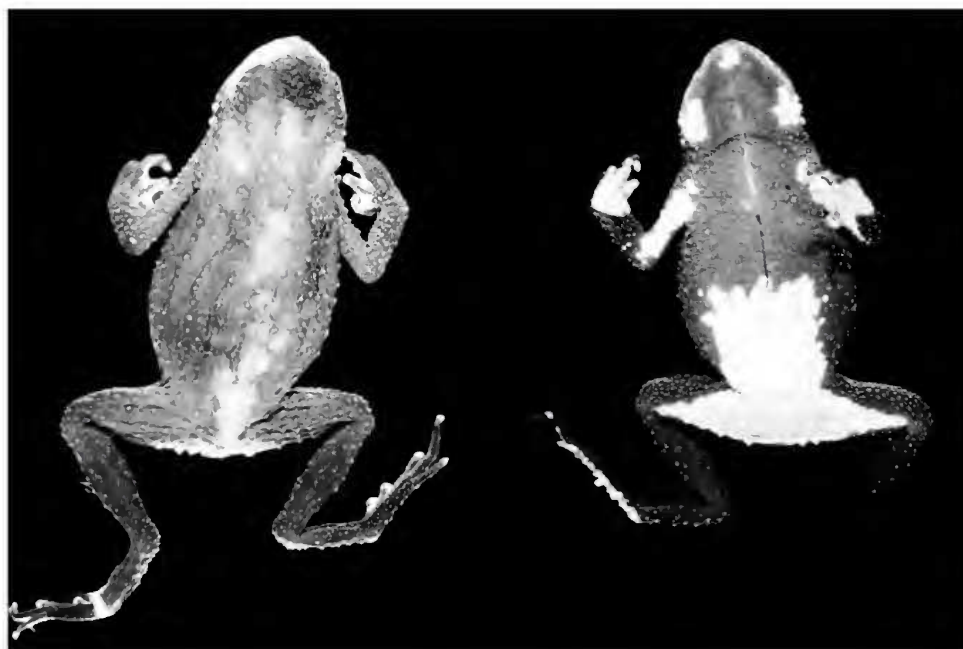


Fig.5- *Melanophryniscus tumifrons* (Boulenger, 1905), holotype ♀ (BMNH 1947.2.1461), dorsal and ventral views.

present. Legs short, robust, lacking tarsal folds; TL approximately equivalent to THL; sum of TL and THL 76% of SVL. Foot (Fig.9) with toes short; length of toes from shortest to longest, I<II<V<III<IV; tips of toes narrow, rounded, not differentiated as discs; toes fimbriated; toes approximately half webbed, border of web indented. Inner metatarsal tubercle large, ovoid, prominent, with inner border free; outer metatarsal tubercle large, circular, approximately equal in size to inner metatarsal tubercle; subarticular tubercles well developed, subconical; supernumerary tubercles present.

Skin on dorsal and lateral surfaces of body largely covered by spinulose warts, snout protuberance smooth; largest warts at angles of mouth and around vent; ventral skin spinulose. Cloacal opening directed posteriorly at mid-level of thighs.

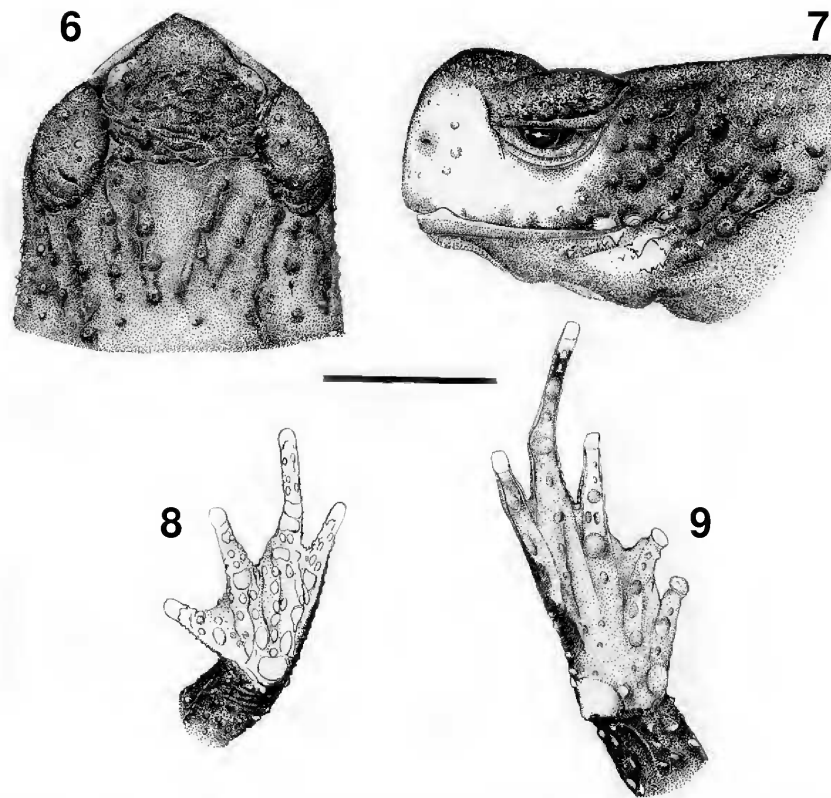
In preservative (70% ethanol), ground color of dorsum, flanks, and venter blackish brown; loreal region pale yellow; a whitish cream blotch in parotoid region; three small whitish cream blotches in gular region, one anteriorly, just near the tip, and the others at both corners of mandible; lower belly, ventral surfaces of forearms and thighs, palmar and plantar surfaces, and tips of digits whitish cream.

Measurements of holotype – SVL 29.9; HL 8.5; HW 8.8; IND 2.0; END 2.3; ED 3.0; UEW 2.4; IOD 4.1; THL 11.3; TL 11.5; FL 17.6.

Variation – There is little variation among the specimens examined except in the shape and size of whitish cream areas. SVL in males, 23.0-25.3mm ( $\bar{x}$  = 24.1; SD = 3.18; n = 3); in female, 29.9mm. Distinct vocal slits present in males.

Remarks – The type-locality of *Melanophryniscus tumifrons* (= *Atelopus tumifrons*) reported by BOULENGER (1905) as “Pernambuco” was disputed by BOKERMANN (1966) who considered it to be in error because specimens were found only in Rio Grande do Sul, and concluded that the type specimen probably came from this state.

The holotype of *M. tumifrons* was “presented by Dr. F.Werner” to the collection of the British Museum (BOULENGER, 1905). According to ADLER (1989), Franz Joseph Maria Werner (1867-1939) was a distinguished Austrian herpetologist, and also an avid explorer, especially of Southeast Europe, Asia Minor, northern Africa, and the islands of the eastern Mediterranean. No trip to Brazil was reported but he could have received specimens collected by contemporaries working in Brazil and later donated them to the British Museum. Another point is that, even if Werner was quite competent in his publications, he occasionally erred and named as new some well-known species of snakes based on specimens whose continent of origin had been mixed up or had no locality data at all (ADLER, 1989). For these reasons it is not improbable that a similar



*Melanophryniscus tumifrons* (Boulenger, 1905), holotype ♀ (BMNH 1947.2.1461): fig.6- dorsal view of head; fig.7- lateral view of head; fig.8- hand; fig.9- foot. Scale bar: 5mm.

mistake occurred in determining the locality of collection of the type specimen of *M. tumifrons*.

In accordance with BOKERMANN (1966) and keeping in mind the real possibility of the mislabeling of the holotype in question, as well as the absence of other evidence which would permit us to better situate the specimen true place of origin, we refute the type locality for *M. tumifrons* cited in the original description, regarding it as erroneous, and designate the State of Rio Grande do Sul, Brazil, as the type locality for this species.

*Melanophryniscus spectabilis* sp.nov.  
(Figs.10-14)

*Melanophryniscus tumifrons* – STRANECK, OLMEDO & CARRIZO, 1993.

Holotype – BRAZIL, SANTA CATARINA, Municipality of Nova Teutônia (27°09'S, 52°25'W), MZUSP 9424, adult ♂ (Fig.10), F.Plaumann col., X/1951.

Paratypes – All collected at the type-locality by F. Plaumann: MZUSP 8701-8710, in VII/1951; MZUSP 9394-9397, 9400-9402, 9409-9420, 9426, 9428, 9430-9436, 9440-9444, 9446-9459, 9461-9464, 9466-9469, 9470-9473, 9475-9484, 9486-

9492, 9494-9495, 9498-9501, 9508-9509, MNRJ 25936-25942, in X/1951; MZUSP 30590, II/1966; MZUSP 9512-9520, no date.

Diagnosis – A medium sized species belonging to the *M. tumifrons* group, diagnosed by the following combination of characters: (1) SVL 26.5-31.1mm in males, 31.9-35.5mm in females; (2) head broader than long, with a prominent, rounded protuberance above snout, extending between eyes to a point near the mid length of upper eyelid; (3) skin on dorsal and lateral surfaces of body largely covered by spinulose warts; (4) foot without tumefaction on metatarsus; (5) ground color of dorsum and flanks dark brown with distinctly marbled pattern of sinuous, irregular pale yellow stripes; (6) gular region, chest, belly, ventral surfaces of forearms and thighs, and palmar and plantar surfaces pale yellow; (7) gular region and chest with irregular dark brown stains; (8) dorsal surface of legs dark brown with distinct pale yellow transverse stripes.

Description of holotype – General aspect robust, bufonoid. Head broader than long; HW approximately 33% of SVL; head lacking cranial crests; snout short, slightly projecting beyond the anterior margin of mouth, rounded in dorsal



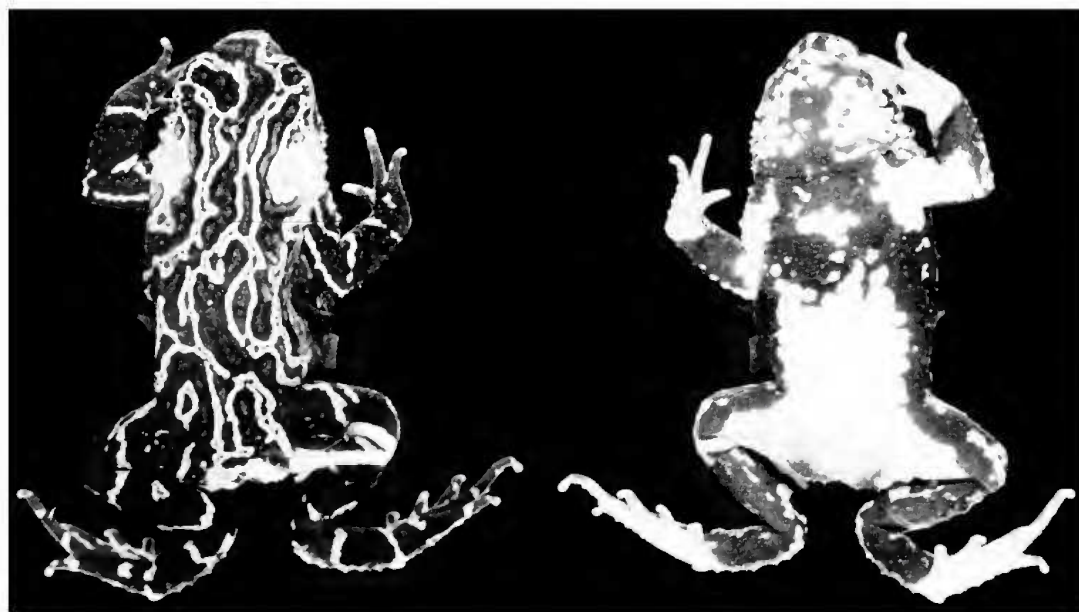


Fig.10- *Melanophryniscus spectabilis* sp.nov., holotype ♂ (MZUSP 9424), dorsal and ventral views.

and lateral views (Figs.11-12); a prominent, rounded protuberance above snout, extending between the eyes to a point near the mid length of upper eyelid; in lateral view, snout protuberance is raised slightly above the level of upper eyelid; an inconspicuous longitudinal sulcus bisects the snout protuberance; canthus rostralis rounded due to snout protuberance; loreal region slightly concave, vertical; nostrils very small, at tip of snout, directed anteriorly; IND slightly smaller than UEW and approximately 60% of IOD; UEW approximately 70% of IOD; ED greater than IND, END, and UEW, and slightly smaller than IOD; tympanum concealed; vocal slits present; tongue rounded, much longer than wide, with posterior margin free; choanae small, rounded, largely separated. Arms slender, lacking ulnar folds; axillary membrane absent. Hand (Fig.13) with fingers short; length of fingers from shortest to largest,  $I < II < IV < III$ ; tips of fingers narrow, rounded, not differentiated as discs; fingers fimbriated; webbing absent. Outer palmar tubercle large, rounded; inner palmar tubercle small, rounded, approximately 25% size outer tubercle; subarticular tubercles well developed, subconical; supernumerary tubercles present. Legs short, robust, lacking tarsal folds; TL equal THL; sum of TL and THL 72% of SVL. Foot (Fig.14) with toes short; length of toes from shortest to longest,  $I < II < V < III < IV$ ; tips of toes narrow, rounded, not differentiated as discs; toes

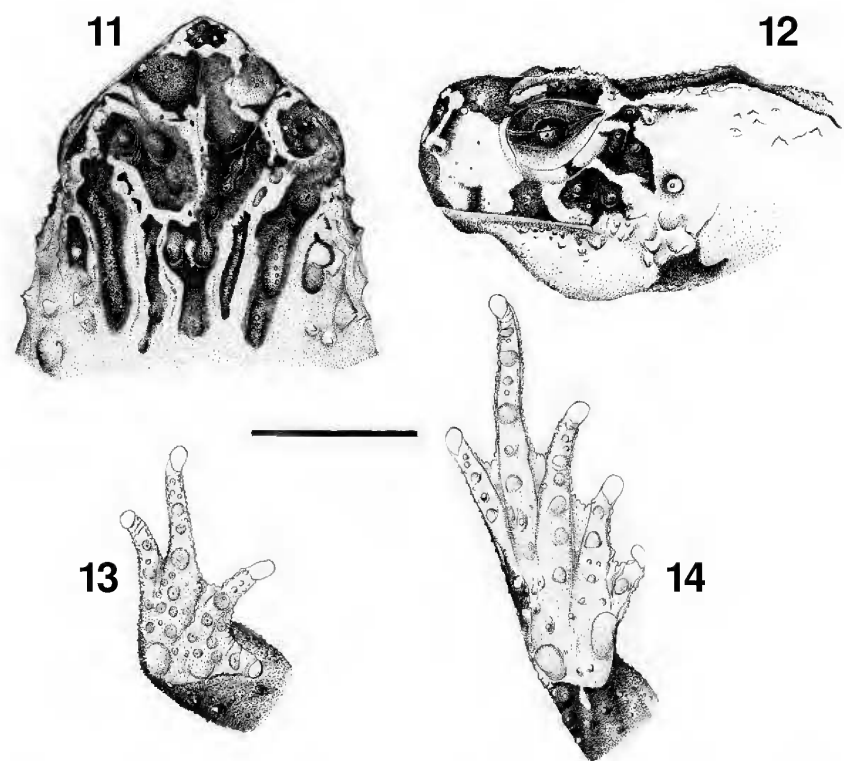
fimbriated, approximately half webbed; border of web indented. Inner metatarsal tubercle large, ovoid, prominent, with inner border free; outer metatarsal tubercle large, circular, approximately equal in size to inner metatarsal tubercle; subarticular tubercles well developed, subconical; supernumerary tubercles present.

Skin on dorsal and lateral surfaces of body largely covered by spinulose warts; snout protuberance finely spinulose; ventral skin spinulose. Cloacal opening directed posteriorly at mid-level of thighs.

In preservative (70% ethanol), ground color of dorsum and flanks dark brown with distinctly marbled pattern of sinuous, irregular pale yellow stripes; loreal region pale yellow; a large pale yellow blotch on parotoid region extending ventrally to the chest and gular region; gular region, chest, belly, ventral surfaces of forearms and thighs, and palmar and plantar surfaces pale yellow; gular region and chest with irregular dark brown stains; dorsal surfaces of legs dark brown with distinct pale yellow transverse stripes.

Measurements of holotype – SVL 27.7; HL 8.2; HW 9.1; IND 1.9; END 2.4; ED 2.9; UEW 2.3; IOD 3.2; THL 10.1; TL 10.1; FL 17.1.

Variation – Variation in measurements is presented in table 1. The color pattern is highly variable in dorsal and ventral views, primarily in the amount and shape of pale yellow irregular stripes on dorsum, and in the relation of the size of dark brown and pale yellow areas on venter.



*Melanophryniscus spectabilis* sp.nov., holotype ♂ (MZUSP 9424): fig.11- dorsal view of head; fig.12- lateral view of head; fig.13- hand; fig.14- foot. Scale bar: 5mm.

TABLE 1  
Measurements of *Melanophryniscus spectabilis* sp.nov.

Characters	♂ (n=15)			♀ (n=10)		
	Range	$\bar{x}$	SD	Range	$\bar{x}$	SD
SVL	26.5-31.1	28.9	3.37	31.9-35.5	33.6	3.51
HL	7.6-9.4	8.4	2.13	8.1-10.0	9.4	2.24
HW	8.9-10.2	9.5	2.25	9.9-11.0	10.4	2.34
IND	1.9-2.4	2.1	0.76	2.2-2.5	2.3	0.85
END	2.1-2.7	2.4	0.89	2.4-3.0	2.7	1.00
ED	2.4-2.9	2.7	0.98	2.7-3.0	2.8	1.04
UEW	2.2-2.6	2.4	0.89	2.5-2.9	2.7	0.99
IOD	3.0-3.7	3.3	1.21	3.2-4.2	3.7	1.30
THL	10.1-11.7	10.9	2.39	11.0-13.0	11.9	2.47
TL	9.6-11.8	10.8	2.38	10.8-12.5	11.7	2.46
FL	15.1-18.2	17.0	2.83	17.1-20.1	18.8	2.93

(n) number of specimens; ( $\bar{x}$ ) mean; (SD) standard deviation.

**Etymology** – The specific name is a Latin adjective meaning notable or showy, in reference to the remarkable color pattern of this species.  
**Remarks** – STRANECK, OLMEDO & CARRIZO (1993) presented a short description of color in

life, notes on habitat, sonagrams of mating calls, and drawings of the general aspect and venter of a specimen identified as *M. tumifrons*, obtained in the Province of Misiones, Argentina, and currently housed at the Museo Argentino de



Ciencias Naturales (MACN 33471). Based on the data presented, particularly the color pattern, we associate this specimen with *M. spectabilis*.

*Melanophryniscus simplex* sp. nov.  
(Figs. 15-19)

Holotype – BRAZIL, SANTA CATARINA, Boca da Serra, near Bom Jardim do Sul, Municipality of São Joaquim (28°20'S, 49°38'W), MZUSP 35599, adult ♂ (Fig. 15), G.R. Kloss col., 07-13/XII/1970.

Paratypes – Collected with the holotype: MZUSP 35596, 35600-35604, MNRJ 25943-25945.

Diagnosis – A medium sized species belonging to the *M. tumifrons* group and diagnosed by the following combination of characters: (1) SVL 24.0-26.0mm in males, 27.7-29.5mm in females; (2) head broader than long, with a prominent, rounded protuberance above snout, extending between the eyes to a point near the middle of the length of the upper eyelid; (3) skin on dorsal and lateral surfaces of body largely covered by spinulose warts; (4) foot without tumefaction on metatarsus; (5) ground color of dorsum, flanks, and venter dark brown; (6) three small pale yellow blotches in the gular region; (7) on the chest, just at the insertion of the arms, belly, ventral surfaces of forearms and thighs, and palmar and plantar surfaces pale yellow; (8) dorsal surfaces of legs dark brown; (9) small pale yellow spot above cloacal opening and at tibio-tarsal articulation.

Description of holotype – General aspect robust, bufonoid. Head broader than long; HW nearly one third of SVL; head lacking cranial crests; snout short, slightly projecting beyond the mouth, rounded in dorsal view and vertical in lateral view (Figs. 16-17); a prominent, rounded protuberance above snout, extending between eyes to a point near mid length of upper eyelid; in lateral view, snout protuberance is raised above the level of upper eyelid; a conspicuous longitudinal sulcus bisects snout protuberance; canthus rostralis rounded due to snout protuberance; loreal region slightly concave, vertical; nostrils small, at tip of snout, directed anteriorly; IND slightly less than UEW and approximately 80% of IOD; UEW approximately 90% of IOD; ED greater than IND and END, equal to UEW, and smaller than IOD; tympanum concealed; vocal slits present; tongue rounded, much longer than wide, with posterior margin

free; choanae small, rounded, largely separated.

Arms slender, lacking ulnar folds; axillary membrane absent. Hand (Fig. 18) with fingers short; length of fingers from shortest to largest, I<II<IV<III; tips of fingers narrow, rounded, not differentiated as discs; fingers fimbriated; webbing absent. Outer palmar tubercle large, rounded; inner palmar tubercle small, rounded, approximately 50% size of outer tubercle; subarticular tubercles well developed, subconical; second tubercle on fingers II and III bilobed; supernumerary tubercles present. Legs short, robust, lacking tarsal folds; TL slightly less than THL; sum of TL and THL 80% of SVL. Foot (Fig. 19) with toes short; length of toes from shortest to longest, I<II<V<III<IV; tips of toes narrow, rounded, not differentiated as discs; toes fimbriated, approximately half webbed; border of web indented. Inner metatarsal tubercle large, ovoid, prominent, with inner border free; outer metatarsal tubercle large, circular, smaller than the elongate inner metatarsal tubercle; subarticular tubercles well developed, subconical; supernumerary tubercles present.

Skin on dorsal and lateral surfaces largely covered by spinulose warts; surface of snout protuberance finely spinulose; ventral skin spinulose. Cloacal opening directed posteriorly at mid-level of thighs.

In preservative (70% ethanol), ground color of dorsum, flanks, and venter dark brown; loreal region pale yellow; a large pale yellow blotch in parotoid region; three pale yellow blotches in gular region, one anteriorly, just near the tip, and the others at both corners of mandible; axillary ventral region, belly, ventral surfaces of forearms and thighs, and palmar and plantar surfaces pale yellow. A small pale yellow spot present immediately above cloacal opening and at tibio-tarsal articulations.

Measurements of holotype – SVL 24.6; HL 6.6; HW 8.4; IND 2.3; END 2.1; ED 2.6; UEW 2.6; IOD 2.9; THL 10.0; TL 9.8; FL 15.4.

Variation – Variation in measurements are presented in table 2. The dorsal color pattern is invariable; ventral pattern varies little, mainly in the shape and size of pale yellow blotches and spots.

Etymology – The name, a Latin adjective, refers to the simple color pattern of this species.

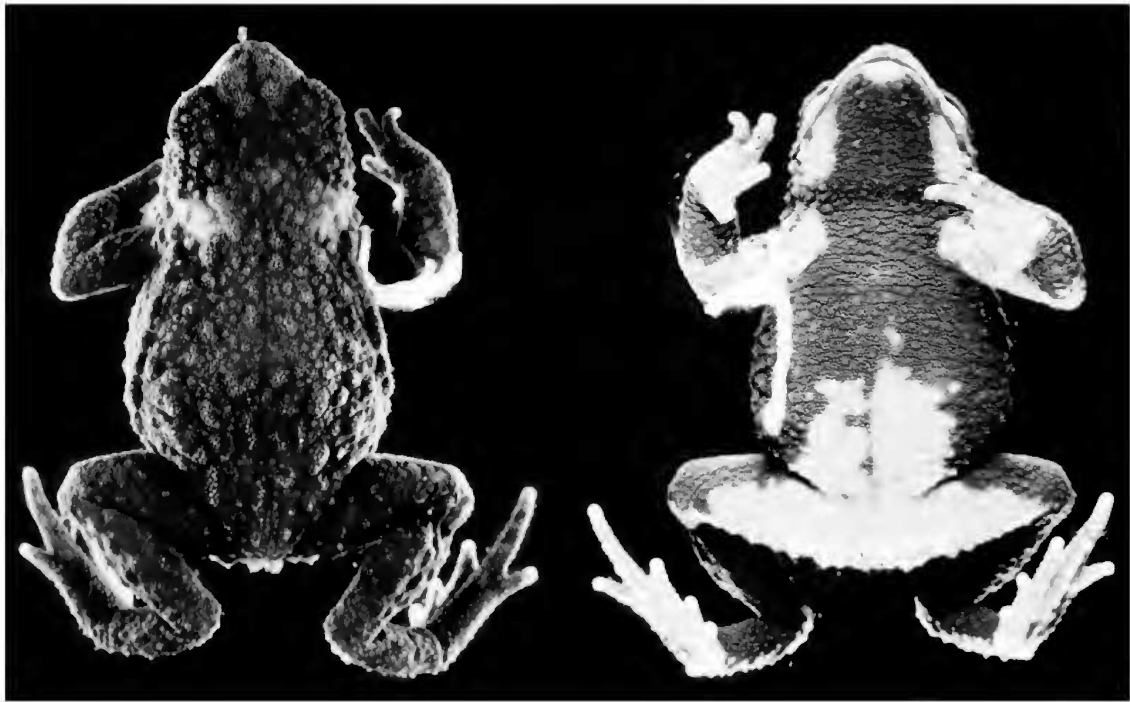
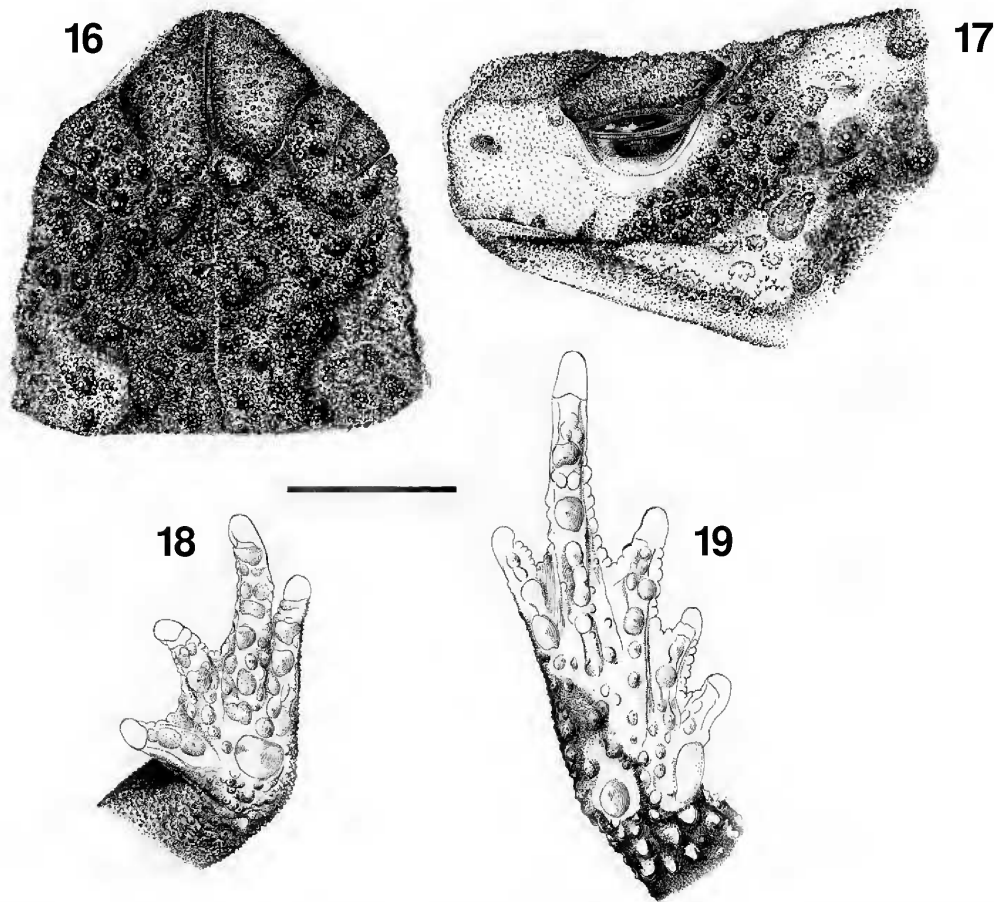


Fig.15- *Melanophryniscus simplex* sp.nov., holotype ♂ (MZUSP 35599), dorsal and ventral views.



*Melanophryniscus simplex* sp.nov., holotype ♂ (MZUSP 35599): fig.16- dorsal view of head; fig.17- lateral view of head; fig.18- hand; fig.19- foot. Scale bar: 5mm.

TABLE 2  
Measurements of *Melanophryniscus simplex* sp.nov.

Characters	♂ (n=6)			♀ (n=4)		
	Range	$\bar{x}$	SD	Range	$\bar{x}$	SD
SVL	24.0-26.0	24.8	3.21	27.7-29.5	28.6	3.36
HL	6.1-7.0	6.6	1.89	7.9-8.3	8.1	2.09
HW	7.9-8.9	8.3	2.11	8.4-9.3	8.9	2.18
IND	1.9-2.3	2.0	0.68	1.8-2.2	2.0	0.72
END	2.1-2.3	2.2	0.78	2.0-2.4	2.3	0.82
ED	2.4-2.7	2.5	0.93	2.5-2.7	2.6	0.96
UEW	2.2-2.6	2.3	0.85	2.4-2.7	2.6	0.95
IOD	2.6-3.2	3.0	1.11	2.9-3.3	3.2	1.16
THL	9.6-10.6	10.0	2.30	9.7-11.2	10.4	2.34
TL	8.6-9.8	9.4	2.24	9.5-10.9	10.1	2.32
FL	14.7-16.5	15.3	2.73	15.6-17.2	16.4	2.80

(n) number of specimens; ( $\bar{x}$ ) mean; (SD) standard deviation.

## DISCUSSION

Members of the *Melanophryniscus tumifrons* group can be separated into two subgroups. One is characterized by the presence of small tubercles on dorsum and venter, and by having a mottled pattern on venter; this subgroup includes *M. orejasmirandai*, *M. pachyrhynus*, and *M. spectabilis* sp.nov. The other subgroup is characterized by the presence of medium to large tubercles on the dorsum, and by having a large, well delimited but variably shaped, whitish cream or pale yellow spot on venter; this subgroup includes *M. cambaraensis*, *M. devincenzii*, *M. macrogranulosus*, *M. simplex* sp.nov., and *M. tumifrons*.

*Melanophryniscus orejasmirandai* and *M. pachyrhynus* are readily separated from *M. spectabilis* sp.nov. by the absence of distinctly marbled pattern of sinuous, irregular stripes on dorsum (present in *M. spectabilis* sp.nov.). Additionally, *M. pachyrhynus* is distinguished from *M. orejasmirandai* and *M. spectabilis* sp.nov. by the presence of a prominent glandular tumefaction on the metatarsus of the toes IV and V (absent in the other species).

In *M. cambaraensis* and *M. macrogranulosus*, the sides of the snout have a color pattern similar to that of the dorsal surface of head while in *M. devincenzii*, *M. tumifrons*, and *M. simplex* sp.nov. this color pattern is different from that of the dorsal surface of head (BRAUN, 1973; BRAUN &

BRAUN, 1979; our data). In the *M. tumifrons* group, two species are considered large, *M. cambaraensis* (30.9-36.6mm SVL) and *M. macrogranulosus* (32.0-37.9mm SVL), and three species are small to medium sized, *M. devincenzii* (20.0-22.5mm SVL), *M. tumifrons* (23.0-29.9mm SVL), and *M. simplex* sp.nov. (24.0-29.5mm SVL) (BRAUN, 1973; BRAUN & BRAUN, 1979; KLAPPENBACH, 1968; our data).

*Melanophryniscus devincenzii* has a uniformly black gular region (*M. tumifrons* and *M. simplex* sp.nov. have cream spots in gular region) and the dorsal surface of the body has two to six longitudinal lines formed by the fusion of tubercles (*M. tumifrons* has two dorsolateral lines, and *M. simplex* sp.nov. do not has dorsal lines).

*Melanophryniscus simplex* sp.nov. is readily distinguished from *M. tumifrons* by the presence of numerous large dorsal tubercles (*M. tumifrons* has scattered medium sized dorsal tubercles), and numerous spines on dorsal surface of the hands and feet (*M. tumifrons* has a few scattered spines).

The *M. tumifrons* group, as proposed, is comprised of eight species, occurring in southern South America between 26° to 32°S and 49° to 57°W in Brazil (states of Paraná, Santa Catarina, and Rio Grande do Sul), Argentina (Province of Misiones), and Uruguay (departments of Maldonado, Rivera, and Tacuarembó).



## SPECIMENS EXAMINED

*Melanophryniscus cambaraensis* – BRAZIL: RIO GRANDE DO SUL, São Francisco de Paula (MNRJ 21091-21094).

*Melanophryniscus orejasmirandai* – URUGUAY: MALDONADO, Sierra de Animas (MZUSP 61112, paratype).

*Melanophryniscus pachyrhynchus* – BRAZIL: RIO GRANDE DO SUL, São Lourenço do Sul (MZUSP 756, lectotype); (MZUSP 752, paralectotype).

*Melanophryniscus simplex* – BRAZIL: SANTA CATARINA, Boca da Serra, near Bom Jardim do Sul, Municipality of São Joaquim (MZUSP 35599, holotype; MZUSP 35596, 35600-35604, MNRJ 25943-25945, paratypes).

*Melanophryniscus spectabilis* – BRAZIL: SANTA CATARINA, Nova Teutônia (MZUSP 9424, holotype; MZUSP 9394-9397, 9400-9402, 9409-9420, 9426, 9428, 9430-9436, 9440-9444, 9446-9459, 9461-9464, 9466-9469, 9470-9473, 9475-9484, 9486-9492, 9494-9495, 9498-9501, 9508-9509, 9512-9520, 30590, MNRJ 25936-25942, paratypes).

*Melanophryniscus tumifrons* – BRAZIL: RIO GRANDE DO SUL, (BMNH 1947.2.1461, holotype); (MNRJ 504); São Francisco de Paula (AL-MN 451, MNRJ 4251-4252, 4254). PARANÁ, Bituruna (MNRJ 1780, 9454).

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